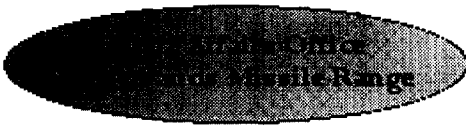


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White Sands at a Glance

White Sands Missile Range is a multi-service test range whose main function is the support of missile development and test programs for the Army, Navy, Air Force, National Aeronautics and Space Administration (NASA), other government agencies and private industry.

The White Sands range is under operational control of the U.S. Army Test and Evaluation Command (TECOM), Aberdeen Proving Ground, Maryland. TECOM is the Army's test laboratory for planning and conducting engineering and service tests of all materials from missiles to rifles, tanks to trucks, clothing to radios, aviation to fire control equipment.

The missile range is in the Tularosa Basin of south-central New Mexico. The range boundaries extend almost 100 miles north to south by 40 miles east to west. At almost 3,200 square miles the range is the largest military installation in the country and could easily encompass the states of Delaware and Rhode Island. The headquarters area is 20 miles east of Las Cruces, New Mexico, and 45 miles north of El Paso, Texas.

Range History

Before World War II the land in the missile range was used for grazing by cattle and goat ranchers. Prospectors hunted for a variety of minerals in the mountain ranges on White Sands and some small-scale mining was conducted. Earlier, as the Spanish colonized the area, immigrants gathered salt in the Tularosa Basin lakebeds. For centuries native Americans roamed the basin and mountains.

During World War II, with the eye-opening German rocket work, the U.S. Army Ordnance Corps recognized the possibilities of rocket warfare and sponsored research and development in methods of missile guidance. The missile range was established July 9, 1945, as White Sands Proving Ground (name changed in 1958) to be America's testing range for the development of rocket technology and missile weapons.

As soon as White Sands was established work began on a launch complex for testing this technology. On September 26, 1945, a Tiny Tim booster was fired at the complex to test its compatibility with a launch tower. It was the first hot firing on the proving ground. On October 11, a Tiny Tim boosted a WAC Corporal rocket from the tower. The WAC Corporal's engine then fired and propelled the vehicle to an altitude of 43 miles.

Later this launch complex was the focal point for V-2 firings and developmental testing of such missiles as Nike, Viking, Corporal, Lance and Multiple Launch Rocket System. Because of that historic work, the National Park Service designated the complex a national historic landmark in October 1985. It is still active today and is known as Launch Complex 33.

Trinity Site, another national historic landmark at White Sands, is near the north boundary. The world's first atomic bomb was exploded by the Manhattan Project at Trinity Site on July 16, 1945. It marked the beginning of the atomic age. The landmark, which includes the McDonald ranch house where the plutonium core to the bomb was assembled, is open to the public on the first Saturdays of April and October.

In addition to a fascinating history, White Sands is rich in natural assets. The range encompasses two mountain ranges, plus White Sands National Monument and the San Andres Wildlife Refuge. The diversity of wildlife on the range includes African oryx, desert bighorn sheep, pronghorn, cougars, golden eagles and a variety of rattlesnakes.

Since 1960, WSMR has developed call-up areas adjacent to the range's north and west boundaries. The area on the north is a 40 by 40 mile square. White Sands has agreements with the ranchers living in these areas which allow the range to evacuate the residents several times each year. The evacuations, which almost double the size of the range when all areas are used, permit testing of some of today's long-range missiles.

In addition to firing rockets and missiles on White Sands, the range has developed launch facilities in other areas of New Mexico, Utah and Idaho for long-range testing. In these tests the missiles are fired from the remote location to impact on WSMR.

White Sands also provides an alternate landing site for the space shuttle program. On March 30, 1982, the orbiter Columbia landed on the range's Northrup Strip after its third flight into space. The landing strip is currently used as the primary training site for shuttle pilots to practice approaches and mock landings in the shuttle trainer aircraft.

● [To view color photo of a Delta Clipper test near Northrup Strip](#)

Today's Mission

Today White Sands is a unique combination of geography, laboratories, weather, personnel and support activities which make it ideal for modern testing. It works with missile systems from their cradles to the grave, testing not only developmental systems but production units to assure continuing quality.

A highly trained and motivated work force is the key to the professional testing done at the range. Personnel are a mix of military, civilian and contractor employees. About half live in the Las Cruces area while others commute daily from El Paso, Alamogordo and other New Mexico areas.

To collect data during missions, the sprawling range is equipped with a network of highly accurate optical and electronic instruments which are essential for valid and valuable testing. Sophisticated computer systems process and correlate the voluminous data to provide scientists and range users with timely and reliable performance records.

White Sands Missile Range has more than 1,500 precisely surveyed instrumentation sites and some 1,000 of the newest and most modern types of optical and electronics instrument systems. These include long-range cameras, tracking telescopes, interferometer systems, radars and telemetry. For general use, radars, telemetry and optic systems include both mobile and fixed systems.

A timing system provides fixed-timing rates, elapsed time and control signals. Control signals are combined into pulsed signals in standard format for distribution and utilization. Other range services include calibration, communication, meteorological, photographic, television and aerial target support, along with the relatively easy and fast recovery of test items to facilitate evaluation.

Laboratory testing facilities are modern and varied. They include nuclear environments, weapon systems simulation, guidance and control, propulsion, climatic, microbiological and metallographic.

To meet the spectrum of requirements set up by the various range users for their increasingly complex test programs, WSMR has developed broad instrumentation capabilities and operational techniques. In addition to real-time and deferred-time, capabilities include simultaneous testing, measurements of trajectory, attitude and events, vehicle electromagnetic signature and re-entry phenomena.

Major Directorates

In order to accomplish missions prescribed by the Department of Defense and Department of Army, WSMR is divided into various directorates and administrative/support offices. A brief description of some of these organizations follows.

The National Range Operations Directorate (NRO) plans and executes national range missions. It directs operations of the range and support activities such as data collection and provides direction and control of the range scheduling, operations and utilization of resources.

The Materiel Test Directorate (MTD) is the testing arm of WSMR. It provides field and laboratory testing and evaluation of Army missile systems, materiel and equipment.

The Instrumentation Development Directorate (IDD) provides the instrumentation systems, equipment and facilities which comprise the major range and test facility base. They perform the planning, research, engineering, development, procurement, installation and training required to maintain the instrumentation consistent with user requirements.

The Directorate of Information Management (DOIM) function integrates all areas related to the distribution of information at WSMR, to include computers, libraries and mail distribution. DOIM provides engineering, modification, installation, operations and maintenance for communications, automation, visual information, records management and publications, and support for all range users.

The Army Air Operations Directorate (AA) provides aerial reconnaissance, aerial recovery and administrative flight support for WSMR.

The Directorate for Applied Technology, Test and Simulation (DATTS) has the most complete assembly of nuclear weapon environment simulators in the Department of Defense. This includes a solar furnace capable of focusing sunlight to reach a temperature of up to 5,000 degrees Fahrenheit on test items.

The U.S. Army Electronic Proving Ground (EPG) at Fort Huachuca, Arizona, became a missile range activity in 1994. The EPG mission is to support developers by conducting tests of new electronic systems including command, control, communication, intelligence (C4I) and electronic warfare equipment.

Tenants

Sharing White Sands Missile Range and many of its facilities are several tenant organizations.

The *U.S. Naval Air Warfare Center Weapons Division* - White Sands Detachment (NAWC) is the land-locked arm of the Navy's missile, rocket, gun and directed energy programs. NAWC was established at WSMR in 1946. Today, at its "USS Desert Ship (LLS-1)," NAWC tests modern Naval surface weapon systems. In its research rocket program, NAWC continues providing sounding rocket launch support for NASA, the Air Force Geophysics Laboratory, the Naval Research Laboratory, the Ballistic Missile Defense Organization and recently added commercial customers to the list. Their high energy laser activity

is responsible for the Mid Infrared Advanced Chemical Laser and the SEALITE Beam Director at the High Energy Laser Systems Test Facility.

The **Deputy for Air Force** acts as his service's representative on the WSMR Commanding General's staff. He serves as the sponsor for all Air Force research and development program testing on WSMR. The office coordinates these program requirements with the range, as well as assisting users in the preparation of necessary range program documentation. It additionally coordinates range support for all tactical flight training and Air Force exercises conducted on range. The Deputy for Air Force also serves as the executive agent for WSMR on all FAA matters and provides real-time control and management of the range's restricted airspace.

The **Battlefield Environment Directorate (BED)** is one of the U.S. Army Research Laboratory (ARL) tenants at WSMR. Its activities on range date back to 1946 when, as an agent of the Army Signal Corps, it provided radar and communications support for the German V-2 rocket program. Today the laboratory has the research mission of maximizing world-wide combat and strategic effectiveness by continually improving Army-required, atmospheric related products.

Revealing the face of weapon system vulnerability through its many electronic disguises is the business of the Electronic Warfare Division of ARL's **Survivability/Lethality Analysis Directorate**. Since 1952 the division has been determining the electronic countermeasures vulnerability of all Army missiles and other systems affected by electromagnetic radiation. Another major effort is devoted to ferreting out the vulnerabilities of foreign missile systems which pose a potential threat to the Army in the field.

The **National Aeronautics and Space Administration (NASA)** is one of the newer users of the range. WSMR was the site for the initial tests of the launch escape systems on the Saturn booster for the moon-shot program that put man on the moon and returned him. Recently, NASA's major efforts have been directed toward the space shuttle program. Most of the shuttle's rocket engines, components and materials used in the orbiter, and payloads were tested at the NASA White Sands Test Facility before the first shuttle flight. Shuttle astronauts train over Northrup Strip (now named White Sands Space Harbor), practicing landings in a jet aircraft which simulates shuttle flight characteristics. The ground terminal of the NASA Tracking and Data Relay Satellite System (TDRSS) is located at the NASA White Sands Test Facility.

The **U.S. Army Training and Doctrine Command's (TRADOC's) Analysis Command (TRAC)** employs a highly technical work force. Using a variety of analytic tools, including simulations on its computer graphics facility and peripheral equipment, TRAC exercises weapon systems in various scenario and threat situations. Results are then analyzed and TRAC evaluates weapons for effectiveness versus cost. TRAC also has a leading role in the development and tactical analysis of weapons systems. It is also involved in training effectiveness analysis throughout the Army.

 [Return to **Fact Sheets** table of contents](#)

 [Return to **Public Affairs** table of contents](#)